86625

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SOD) or ((cu (a) zn) (a) (sod or superox?))
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(cu/zn SOD) or ((cu (a) zn) (a) (sod or superox?))
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=> s (coppe? (4a) (superox? (a) dism?)) or catalas? or (glutathi? (a) peroxid?) or
(cu (a) zn (a) SOD) or ((cu (a) zn) (a) (sod or superox?))
L1      166743 (COPPE? (4A) (SUPEROX? (A) DISM?)) OR CATALAS? OR (GLUTATHI?
               (A) PEROXID?) OR (CU (A) ZN (A) SOD) OR ((CU (A) ZN) (A) (SOD
               OR SUPEROX?))

=> s antisense or (complement? (n2) (oligonucl? or nucle))
MISSING OPERATOR 'MPLEMENT? (N2'
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nested terms that are not separated by a logical operator.

=> s antisense or (complement? (2n) (oligonucl? or nucle))
L2      105933 ANTISENSE OR (COMPLEMENT? (2N) (OLIGONUCL? OR NUCLE))

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L3          395 L1 AND L2

=> s l1 same l2
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L4          279 L1 (S) L2

=> s l1 (5n) l2
L5           65 L1 (5N) L2

=> dup rem l5
PROCESSING COMPLETED FOR L5
L6           31 DUP REM L5 (34 DUPLICATES REMOVED)

=> s l6 and py<=2000
   2 FILES SEARCHED...
L7           26 L6 AND PY<=2000

=> d l7 1-26 ibib abs
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L7 ANSWER 1 OF 26 MEDLINE
ACCESSION NUMBER: 2001561489 MEDLINE
DOCUMENT NUMBER: 21519624 PubMed ID: 11607539
TITLE: Induction, modification, and transduction of the salicylic acid signal in plant defense responses.
AUTHOR: Chen Z; Malamy J; Henning J; Conrath U; Sanchez-Casas P; Silva H; Ricigliano J; Klessig D K
CORPORATE SOURCE: Waksman Institute and Department of Molecular Biology and Biochemistry, Rutgers, The State University of New Jersey, Piscataway, NJ 08855, USA.
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, **(1995 May 9)** 92 (10) 4134-7.
Journal code: 7505876. ISSN: 0027-8424.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
ENTRY MONTH: 200112
ENTRY DATE: Entered STN: 20011022
Last Updated on STN: 20020122
Entered Medline: 20011207

AB Studies in our laboratory as well as others strongly suggest that salicylic acid (SA) plays an important signaling role in plant defense against pathogens. We have found that increases in endogenous SA levels correlates with both resistance of tobacco to infection with tobacco mosaic virus and induction of defense-related genes such as that encoding pathogenesis-related protein 1 (PR-1). Some of this newly synthesized SA was conjugated to glucose to form SA beta-glucoside. A cell wall-associated beta-glucosidase activity that releases SA from this glucoside has been identified, suggesting that SA beta-glucoside serves as an inactive storage form of SA. By purifying a soluble SA-binding protein and isolating its encoding cDNA from tobacco, we have been able to further characterize the mechanism of SA signaling. This protein is a catalase, and binding of SA and its biologically active analogues inhibited catalase's ability to convert H2O2 to O2 and H2O. The resulting elevated levels of cellular H2O2 appeared to induce PR-1 gene expression, perhaps by acting as a second messenger. Additionally, transgenic tobacco expressing an **antisense** copy of the **catalase** gene and exhibiting depressed levels of catalase also showed constitutive expression of PR-1 genes. To further dissect the SA signaling pathway, we have tested several abiotic inducers of PR gene expression and disease resistance for their ability to stimulate SA production. Levels of SA and its glucoside rose following application of all of the inducers except 2,6-dichloroisonicotinic acid. 2,6-Dichloroisonicotinic acid was found to bind catalase directly and inhibit its enzymatic activity. Thus, it appears that many compounds that induce PR gene expression and disease resistance in plants inactivate catalases directly or indirectly.

L7 ANSWER 2 OF 26 MEDLINE
ACCESSION NUMBER: 2000478682 MEDLINE
DOCUMENT NUMBER: 20483339 PubMed ID: 11030422
TITLE: Active oxygen species as mediators of plant immunity: three case studies.
AUTHOR: Sandermann H Jr
CORPORATE SOURCE: GSF-Forschungszentrum fur Umwelt und Gesundheit GmbH, Institut fur Biochemische Pflanzenpathologie, Oberschleissheim, Germany.
SOURCE: BIOLOGICAL CHEMISTRY, **(2000 Aug)** 381 (8) 649-53.
Ref: 38
Journal code: 9700112. ISSN: 1431-6730.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200103
ENTRY DATE: Entered STN: 20010404
Last Updated on STN: 20010404
Entered Medline: 20010322

AB A burst of active oxygen species (AOS) is known to be involved in local cell death as part of plant defence against pathogens. It is, however, under dispute to what extent AOS can induce pathogen resistance and immunity throughout the plant. Three experimental strategies that reveal a primary role for AOS and a surprisingly low chemical and spatial specificity are now described for tobacco and Arabidopsis thaliana plants. Ozone is a gaseous AOS that was applied to non-transgenic plants. Hydrogen peroxide or singlet oxygen are AOS that were induced by high-light treatment of transgenic plants that contained **antisense** constructs inhibiting **catalase** activity or chlorophyll biosynthetic enzymes. In all cases, activated oxygen species, cellular lesions, ethylene and salicylic acid, and components of major plant defence systems (systemic acquired resistance, hypersensitive response) were induced, as was resistance towards pathogens (tobacco mosaic virus, Pseudomonas syringae or Peronospora parasitica). It is concluded that active oxygen species can act as mediators of plant immunity so that new non-pesticidal plant protection strategies could be developed.

L7 ANSWER 3 OF 26 MEDLINE
ACCESSION NUMBER: 2000164183 MEDLINE
DOCUMENT NUMBER: 20164183 PubMed ID: 10699760
TITLE: Copper, zinc-superoxide dismutase protects from ultraviolet B-induced apoptosis of SV40-transformed human keratinocytes: the protection is associated with the increased levels of antioxidant enzymes.
AUTHOR: Takahashi H; Hashimoto Y; Aoki N; Kinouchi M; Ishida-Yamamoto A; Iizuka H
CORPORATE SOURCE: Department of Dermatology, Asahikawa Medical College, 3-11 Nishikagura, Asahikawa, Japan.. ht@asahikawa-med.ac.jp
SOURCE: JOURNAL OF DERMATOLOGICAL SCIENCE, **(2000 May)** 23 (1) 12-21.
Journal code: 9011485. ISSN: 0923-1811.
PUB. COUNTRY: Ireland
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200004
ENTRY DATE: Entered STN: 20000505
Last Updated on STN: 20000505
Entered Medline: 20000421

AB It has been reported that cellular oxidative stress induces apoptosis. Ultraviolet radiation that generates reactive oxygen intermediates (ROIs) also induces apoptosis. Superoxide dismutase (SOD) is among the most active scavengers of ROIs, providing defense against the cellular oxidative stress. Mammalian cells express two isozymes of SOD, copper, zinc-SOD (Cu, Zn-SOD) and manganese-SOD (Mn-SOD). Using SV40-transformed human keratinocytes (SVHK cells), we investigated the role of SODs in the ultraviolet B (UVB) irradiation-induced apoptosis. UVB irradiation decreased transiently Cu, Zn- and Mn-SOD activities and their protein levels, with subsequent recovery to the basal levels by 24 h. The UVB-induced decrease in SOD activity was dose-dependent and the maximal effect was obtained at 75 mJ/cm(2). The decrease in Cu, Zn-SOD was more marked than that in Mn-SOD. The cell death assay, annexin-V/propidium

iodide flow cytometry, and DNA fragmentation analysis revealed that UVB irradiation induces apoptosis in SVHK cells. The UVB-induced apoptosis was suppressed by the treatment of antioxidants, catalase, glutathione, and alpha-tochopherol. The stable transfection of Cu, Zn-SOD expression vectors into SVHK cells was accompanied by the increased activities of antioxidant enzymes, catalase, and glutathione reductase, as well as glutathione and the cells were shown to be more resistant to UVB-induced apoptosis. In contrast, the transfection of Mn-SOD affected neither activities of antioxidant enzymes nor the UVB-induced apoptosis. The transfection of **Cu, Zn-SOD antisense** oligomers but not sense oligomers into SVHK or Cu, Zn-SOD cDNA-transfected SVHK (C2) cells significantly decreased the antioxidant enzyme activities and increased the UVB-induced apoptosis. On the other hand, the transfection of Mn-SOD antisense oligomers did not affect the UVB-induced apoptosis. These results suggest that the transfection of Cu, Zn-SOD expression vector, which is accompanied by the increased level of antioxidant enzymes, suppresses the UVB-induced apoptosis of SVHK cells.

L7 ANSWER 4 OF 26 MEDLINE
ACCESSION NUMBER: 1999456842 MEDLINE
DOCUMENT NUMBER: 99456842 PubMed ID: 10526162
TITLE: Superoxide anion inhibits drug-induced tumor cell death.
AUTHOR: Pervaiz S; Ramalingam J K; Hirpara J L; Clement M V
CORPORATE SOURCE: Department of Physiology, National University of Singapore, Singapore.
SOURCE: FEBS LETTERS, **(1999 Oct 15)** 459 (3) 343-8.
Journal code: 0155157. ISSN: 0014-5793.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199911
ENTRY DATE: Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991122

AB Intracellular superoxide (O(2)*- was manipulated in M14 melanoma cells by overexpression or repression of Cu/Zn SOD using a tetracycline-inducible expression system. Scavenging intracellular O(2)*- increased tumor cell sensitivity to daunorubicin, etoposide, and pMC540, whereas expression of the antisense SOD mRNA significantly decreased cell sensitivity to drug treatment. Whereas Cu/Zn SOD overexpressing cells exhibited higher activation of the executioner caspase 3 upon drug exposure, caspase 3 activation was significantly lower when **Cu/Zn SOD** was repressed by **antisense** expression. These data show that intracellular O(2)*- regulates tumor cell response to drug-induced cell death via a direct or indirect effect on the caspase activation pathway.

L7 ANSWER 5 OF 26 MEDLINE
ACCESSION NUMBER: 1999423547 MEDLINE
DOCUMENT NUMBER: 99423547 PubMed ID: 10491654
TITLE: Suppression of intracellular superoxide dismutase activity by antisense oligonucleotides causes inhibition of progesterone production by rat luteal cells.
AUTHOR: Sugino N; Takiguchi S; Kashida S; Takayama H; Yamagata Y; Nakamura Y; Kato H
CORPORATE SOURCE: Department of Obstetrics and Gynecology, Yamaguchi University School of Medicine, Ube 755-8505, Japan.
SOURCE: BIOLOGY OF REPRODUCTION, **(1999 Oct)** 61 (4) 1133-8.
Journal code: 0207224. ISSN: 0006-3363.
PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199911
ENTRY DATE: Entered STN: 20000111
Last Updated on STN: 20000111
Entered Medline: 19991122

AB Superoxide radicals are known to inhibit progesterone production by luteal cells and have also been reported to cause apoptosis in various cells. The corpus luteum has an antioxidant enzyme to scavenge superoxide radicals: copper-zinc superoxide dismutase (Cu, Zn-SOD). However, it remains unknown how the decrease in intracellular Cu,Zn-SOD activity influences luteal function. This study was therefore undertaken to investigate whether suppression of intracellular Cu,Zn-SOD activity inhibits progesterone production by rat luteal cells and causes apoptosis. To suppress intracellular Cu, Zn-SOD activity, dispersed rat luteal cells were incubated with **Cu, Zn-SOD antisense** oligonucleotides. The 48-h treatment with **antisense** oligonucleotides (10 microM) inhibited **Cu,Zn-SOD** activity by 50% and Cu,Zn-SOD mRNA level by 30%, whereas sense oligonucleotides used as the control had no effect. Progesterone concentration in the medium was significantly decreased by the 48-h treatment with antisense oligonucleotides in the presence of hCG, and this inhibitory effect was completely blocked by the simultaneous addition of N-acetyl-L-cysteine, an antioxidant. Treatment with antisense oligonucleotides caused no significant change in the percentage of apoptotic cells as morphologically evaluated by the nuclear staining with Hoechst dye. In conclusion, the decrease in intracellular Cu, Zn-SOD activities inhibits progesterone production by rat luteal cells, which may be mediated by superoxide radicals, suggesting that intracellular Cu,Zn-SOD plays important roles in the regulation of luteal function.

L7 ANSWER 6 OF 26 MEDLINE
ACCESSION NUMBER: 1998111497 MEDLINE
DOCUMENT NUMBER: 98111497 PubMed ID: 9449845
TITLE: Manipulation of catalase levels produces altered photosynthesis in transgenic tobacco plants.
COMMENT: Erratum in: Plant Physiol 1998 Feb;116(2):870
AUTHOR: Brisson L F; Zelitch I; Havir E A
CORPORATE SOURCE: Department of Biochemistry and Genetics, Connecticut Agricultural Experiment Station, New Haven 06504, USA.
SOURCE: PLANT PHYSIOLOGY, **(1998 Jan)** 116 (1) 259-69.
Journal code: 0401224. ISSN: 0032-0889.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199803
ENTRY DATE: Entered STN: 19980319
Last Updated on STN: 19990129
Entered Medline: 19980310

AB Constructs containing the cDNAs encoding the primary leaf catalase in Nicotiana or subunit 1 of cottonseed (Gossypium hirsutum) catalase were introduced in the sense and antisense orientation into the Nicotiana tabacum genome. The N. tabacum leaf cDNA specifically overexpressed CAT-1, the high catalatic [corrected] form, activity. **Antisense** constructs reduced leaf **catalase** specific activities from 0.20 to 0.75 times those of wild type (WT), and overexpression constructs increased catalase specific activities from 1.25 to more than 2.0 times those of WT. The NADH-hydroxypyruvate reductase specific activity in transgenic plants was similar to that in WT. The effect of antisense constructs on photorespiration was studied in transgenic plants by

measuring the CO2 compensation point (gamma) at a leaf temperature of 38 degrees C. A significant linear increase was observed in gamma with decreasing catalase (at 50% lower catalase activity gamma increased 39%). There was a significant temperature-dependent linear decrease in gamma in transgenic leaves with elevated catalase compared with WT leaves (at 50% higher catalase gamma decreased 17%). At 29 degrees C, gamma also decreased with increasing catalase in transgenic leaves compared with WT leaves, but the trend was not statistically significant. Rates of dark respiration were the same in WT and transgenic leaves. Thus, photorespiratory losses of CO2 were significantly reduced with increasing catalase activities at 38 degrees C, indicating that the stoichiometry of photorespiratory CO2 formation per glycolate oxidized normally increases at higher temperatures because of enhanced peroxidation.

L7 ANSWER 7 OF 26 MEDLINE
ACCESSION NUMBER: 97336295 MEDLINE
DOCUMENT NUMBER: 97336295 PubMed ID: 9193071
TITLE: Development of necrosis and activation of disease resistance in transgenic tobacco plants with severely reduced catalase levels.
AUTHOR: Takahashi H; Chen Z; Du H; Liu Y; Klessig D F
CORPORATE SOURCE: Department of Molecular Biology and Biochemistry, Rutgers, State University of New Jersey, Piscataway 08855-0759, USA.
SOURCE: PLANT JOURNAL, **(1997 May)** 11 (5) 993-1005.
Journal code: 9207397. ISSN: 0960-7412.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-U93244
ENTRY MONTH: 199708
ENTRY DATE: Entered STN: 19970813
Last Updated on STN: 19990129
Entered Medline: 19970805

AB Numerous studies argue that salicylic acid (SA) is an important component of the plant signal transduction pathway(s) leading to disease resistance. The discovery that the SA-binding protein is a catalase, whose activity is blocked by SA, led to the proposal that one of SA's modes of action is to inhibit this H2O2-degrading enzyme and thus elevate H2O2 levels. To test this model, an attempt was made to mimic the action of SA by reducing the synthesis of **catalase** using **antisense** RNA technology. Analyses of transgenic tobacco plants that expressed the tobacco catalase 1 (cat1) or **catalase** 2 (cat2) gene in an **antisense** orientation indicate that there is no correlation between modest to high levels of reduction in catalase activity and activation of plant defenses such as pathogenesis-related (PR)-1 protein synthesis. However, three independent **antisense catalase** transgenic plants (ASCAT1 Nos 16, 17, and 28), which exhibited the most severe reduction in catalase activity (approximately 90% or more), developed chlorosis or necrosis on some of their lower leaves. These same leaves accumulated very high levels of PR-1 proteins and showed enhanced resistance to tobacco mosaic virus. Necrosis and elevated SA, which appear to result from severe depression of catalase levels, may be responsible for the induction of these defense responses.

L7 ANSWER 8 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2003:108007 BIOSIS
DOCUMENT NUMBER: PREV200300108007
TITLE: Characterization of transgenic tomato plants expressing an **antisense catalase** gene.
AUTHOR(S): Kerdnaimongkol, Kanogwan (1); Woodson, William R. (1)
CORPORATE SOURCE: (1) Department of Horticulture and Landscape Architecture,

SOURCE: Purdue University, West Lafayette, IN, USA USA
Plant Biology (Rockville), (1998) Vol. 1998, pp. 103. print.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists combined with the 9th International Conference on Arabidopsis Research Madison, WI, USA June 27-July 01, 1998 American Society of Plant Physiologists (ASPP)
.

DOCUMENT TYPE: Conference
LANGUAGE: English

L7 ANSWER 9 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1999:527612 BIOSIS
DOCUMENT NUMBER: PREV199900527612
TITLE: Glutamine synthetase in the phloem plays a major role in controlling proline production.
AUTHOR(S): Brugiere, Norbert; Dubois, Frederic; Limami, Anis M.; Lelandais, Maud; Roux, Yvette; Sangwan, Rajbir S.; Hirel, Bertrand (1)
CORPORATE SOURCE: (1) Laboratoire du Metabolisme et de la Nutrition des Plantes, INRA de Versailles, Route de St. Cyr, F-78026, Versailles Cedex France
SOURCE: Plant Cell, (**Oct.**, **1999**) Vol. 11, No. 10, pp. 1995-2011.
ISSN: 1040-4651.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB To inhibit expression specifically in the phloem, a 274-bp fragment of a cDNA (Gln1-5) encoding cytosolic glutamine synthetase (GS1) from tobacco was placed in the **antisense** orientation downstream of the cytosolic **Cu/Zn superoxide** dismutase promoter of Nicotiana plumbaginifolia. After Agrobacterium-mediated transformation, two transgenic N. tabacum lines exhibiting reduced levels of GS1 mRNA and GS activity in midribs, stems, and roots were obtained. Immunogold labeling experiments allowed us to verify that the GS protein content was markedly decreased in the phloem companion cells of transformed plants. Moreover, a general decrease in proline content in the transgenic plants in comparison with wild-type tobacco was observed when plants were forced to assimilate large amounts of ammonium. In contrast, no major changes in the concentration of amino acids used for nitrogen transport were apparent A 15NH4+-labeling kinetic over a 48-hr period confirmed that in leaves of transgenicplants, the decrease in proline production was directly related to glutamine availability. After 2 weeks of salt treatment, the transgenic plants had a pronounced stress phenotype, consisting of wilting and bleaching in the older leaves. We conclude that GS in the phloem plays a major role in regulating proline production consistent with the function of proline as a nitrogen source and as a key metabolite synthesized in response to water stress.

L7 ANSWER 10 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1999:308859 BIOSIS
DOCUMENT NUMBER: PREV199900308859
TITLE: Inhibition of **catalase** by **antisense** RNA increases susceptibility to oxidative stress and chilling injury in transgenic tomato plants.
AUTHOR(S): Kerdnaimongkol, Kanogwan; Woodson, William R. (1)
CORPORATE SOURCE: (1) Department of Horticulture and Landscape Architecture, Purdue University, West Lafayette, IN, 47907-1165 USA
SOURCE: Journal of the American Society for Horticultural Science, (**July**, **1999**) Vol. 124, No. 4, pp. 330-336.

ISSN: 0003-1062.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Transgenic tomatoes (Lycopersicon esculentum Mill. 'Ohio 8245') expressing an **antisense catalase** gene (ASTOMCAT1) were used to test the hypothesis that modification of the reactive oxygen species scavenging mechanism in plants can lead to changes in oxidative stress tolerance. A 2- to 8-fold reduction in total catalase activity was detected in the leaf extracts of transformants. A 2-fold increase in levels of H2O2 was observed in the transgenic plants with reduced catalase activity. Electrophoretic characterization of multiple catalase isoforms revealed the specific suppression of CAT1 in transgenic plants. Homozygous plants carrying the **antisense catalase** transgene were used to study the effect of alteration in the expression of catalase on stress tolerance. Transgenic plants treated with 3% H2O2 showed visible damage within 24 hours and subsequently died. In contrast, wild-type and azygous control plants recovered from the treatment. Transgenic plants did not survive 4 degreeC chilling stress compared to control wild-type and azygous lines. Physiological analysis of these plants indicated that suppression of catalase activity in transgenic tomato led to enhanced sensitivity to oxidative stress. Our data support a role for catalase in oxidative stress defense system in tomato.

L7 ANSWER 11 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1997:380811 BIOSIS
DOCUMENT NUMBER: PREV199799680014
TITLE: **Antisense** expression of **catalase** gene in transgenic tomato.
AUTHOR(S): Kerdnaimongkol, Kanogwan; Woodson, William R.
CORPORATE SOURCE: Dep. Horticulture, Purdue Univ., Lafayette, IN 47907 USA
SOURCE: Plant Physiology (Rockville), (1997) Vol. 114, No. 3 SUPPL., pp. 102-103.
Meeting Info.: PLANT BIOLOGY '97: 1997 Annual Meetings of the American Society of Plant Physiologists and the Canadian Society of Plant Physiologists, Japanese Society of Plant Physiologists and the Australian Society of Plant Physiologists Vancouver, British Columbia, Canada August 2-6, 1997
ISSN: 0032-0889.
DOCUMENT TYPE: Conference; Abstract; Conference
LANGUAGE: English

L7 ANSWER 12 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1996:347268 BIOSIS
DOCUMENT NUMBER: PREV199699069624
TITLE: Developmental toxicity induced by **antisense** inhibition of **catalase** in cultured mouse embryos.
AUTHOR(S): Bauman, J. W.; Denno, K. M.; Taylor, B. B.; Sadler, T. W.
CORPORATE SOURCE: U.N.C. Birth Defects Cent.,Dep. Cell Biol. and Anat., Univ. N.C., Chapel Hill, NC 27599 USA
SOURCE: Teratology, (1996) Vol. 53, No. 2, pp. 84.
Meeting Info.: Thirty-sixth Annual Meeting of the Teratology Society and the Twentieth Annual Meeting of the Neurobehavioral Teratology Society Keystone, Colorado, USA June 22-27, 1996
ISSN: 0040-3709.
DOCUMENT TYPE: Conference
LANGUAGE: English

L7 ANSWER 13 OF 26 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1996:210195 BIOSIS

DOCUMENT NUMBER: PREV199698766324
TITLE: **Antisense** classical **glutathione peroxidase** is lethal to stably-transfected Chinese hamster ovary cells under G418 selection.
AUTHOR(S): Ferguson-Kohout, N.; Weiss, S. L.; Sunde, R. A.
CORPORATE SOURCE: Univ. Missouri, Columbia, MO 65211 USA
SOURCE: FASEB Journal, (1996) Vol. 10, No. 3, pp. A532. Meeting Info.: Experimental Biology 96, Part II Washington, D.C., USA April 14-17, 1996
ISSN: 0892-6638.
DOCUMENT TYPE: Conference
LANGUAGE: English

L7 ANSWER 14 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 134:27581 CA
TITLE: Antisense suppression of 2-cysteine peroxiredoxin in Arabidopsis specifically enhances the activities and expression of enzymes associated with ascorbate metabolism but not glutathione metabolism
AUTHOR(S): Baier, Margarete; Noctor, Graham; Foyer, Christine H.; Dietz, Karl-Josef
CORPORATE SOURCE: Stoffwechselphysiologie und Biochemie der Pflanzen, Universitat Bielefeld, Bielefeld, 33615, Germany
SOURCE: Plant Physiology (**2000**), 124(2), 823-832
CODEN: PLPHAY; ISSN: 0032-0889
PUBLISHER: American Society of Plant Physiologists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The aim of this study was to characterize the effect of decreased 2-cysteine peroxiredoxin (2-CP) on the leaf anti-oxidative system in Arabidopsis. At three stages of leaf development, two lines of transgenic Arabidopsis mutants with decreased contents of chloroplast 2-CP were compared with wild type and a control line transformed with an empty vector. Glutathione contents and redox state were similar in all plants, and no changes in transcript levels for enzymes involved in glutathione metab. were obsd. Transcript levels for chloroplastic glutathione peroxidase were much lower than those for 2-CP, and both cytosolic and chloroplastic glutathione peroxidase were not increased in the mutants. In contrast, the foliar ascorbate pool was more oxidized in the mutants, although the difference decreased with plant age. The activities of thylakoid and stromal ascorbate peroxidase and particularly monodehydroascorbate reductase were increased as were transcripts for these enzymes. No change in dehydroascorbate reductase activity was obsd., and effects on transcript abundance for glutathione reductase, catalase, and superoxide dismutase were slight or absent. The results demonstrate that 2-CP forms an integral part of the anti-oxidant network of chloroplasts and is functionally interconnected with other defense systems. Suppression of 2-CP leads to increased expression of other anti-oxidative genes possibly mediated by increased oxidn. state of the leaf ascorbate pool.
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 15 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 133:233361 CA
TITLE: Characterization of transgenic tomato plants expressing an **antisense catalase** gene and cloning of a TOMCAT2 gene
AUTHOR(S): Kerdnaimongkol, Kanogwan
CORPORATE SOURCE: Purdue University, USA
SOURCE: (**1999**) 120 pp. Avail.: UMI, Order No. DA9952111

From: Diss. Abstr. Int., B 2000, 60(11), 5355b
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable

L7 ANSWER 16 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 132:291082 CA
TITLE: Inhibition of ethylene biosynthesis by antisense ACC oxidase RNA prevents chilling injury in Charentais cantaloupe melons
AUTHOR(S): Ben-Amor, M.; Flores, B.; Latche, A.; Bouzayen, M.; Pech, J. C.; Romojaro, F.
CORPORATE SOURCE: ENSAT, Avenue de l'Agrobiopole, BP 107 Auzeville, UA-INRA Ethylene et Maturation des Fruits, Cedex, 31326, Fr.
SOURCE: Plant, Cell and Environment (**1999**), 22(12), 1579-1586
CODEN: PLCEDV; ISSN: 0140-7791
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Non-freezing low temp. storage causes injury to melons and most other fruit and vegetables of tropical and subtropical origin. It is demonstrated that ethylene suppression through an antisense ACC oxidase (ACO) gene considerably reduced the sensitivity of Charentais cantaloupe melons to chilling injury. In contrast to wild-type fruit, antisense ACO melons did not develop the characteristic chilling injury of pitting and browning of the rind neither when stored at low temp. (3 wk at 2.degree.C) nor upon rewarming. Treating antisense melons with 10 ppm ethylene for more than 1 day prior to cold storage resulted in the restoration of chilling sensitivity. When the ethylene treatment was performed after cold storage, the chilling injury symptoms did not appear. The tolerance to chilling was assocd. with a lower accumulation of ethanol and acetaldehyde, reduced membrane deterioration and higher capacity of the fruit to remove active oxygen species. The activities of catalase, superoxide dismutase and peroxidase were markedly increased in antisense ACO fruit in comparison with wild-type fruit, particularly upon rewarming and post-storage ethylene treatment. Severe chilling injury symptoms were correlated with a lower activity of activated oxygen scavenging enzymes. These results demonstrate that ethylene acts in conjunction with low temp. to induce metabolic shifts that participate in the development of chilling injury.
REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 17 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 129:239897 CA
TITLE: Antisense compounds which prevent cell death and their uses
INVENTOR(S): Troy, Carol M.; Shelanski, Michael L.
PATENT ASSIGNEE(S): The Trustees of Columbia University In the City of New York, USA
SOURCE: PCT Int. Appl., 60 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9838861	A1	19980911	WO 1998-US4128	19980303 <--

W: AU, CA, JP, MX, US
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

US 5929042	A	19990727	US 1997-810540	19970303 <--
AU 9863454	A1	19980922	AU 1998-63454	19980303 <--
PRIORITY APPLN. INFO.:			US 1997-810540	19970303
			WO 1998-US4128	19980303

AB The invention provides for an antisense oligonucleotide having the sequence 5'GCTCGGCGCCGCCATTTCCAG3'. The invention also provides for an antisense oligonucleotide having the sequence 5'GTCAGCGGCCATCAGCTT3'. The invention further provides for a method for treating a neurodegenerative disorder in a subject which comprises administering to the subject a compd. in an amt. effective to inhibit neuronal cell death and thus treat the neurodegenerative disorder in the subject, which compd. comprises the oligonucleotide 5'GCTCGGCGCCGCCATTTCCAG3' and a delivery agent. The present invention provides for a method of inhibiting trophic factor withdrawal-mediated death of a cell which comprises contacting the cell with an amt. of the oligonucleotide 5'GCTCGGCGCCGCCATTTCCAG3' effective to inhibit death of the cell.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 18 OF 26 CA COPYRIGHT 2003 ACS

ACCESSION NUMBER:	128:113013 CA
TITLE:	Characterization of transgenic tobacco in which catalase activity has been modified through sense and antisense approaches
AUTHOR(S):	Willekens, Hilde; Chamnongpol, Sangpen; Van Montagu, Marc; Inze, Dirk; Van Camp, Wim
CORPORATE SOURCE:	Laboratorium voor Genetica, Dep. Genetics, Flanders Interuniv. Inst. Biotechnology, Belg.
SOURCE:	Biotechnology & Biotechnological Equipment (**1996**), (4), 114-119 CODEN: BTTEEJ
PUBLISHER:	Diagnosis Press
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB The enzymic H2O2 scavengers identified thus far in higher eukaryotes fall into two classes: catalases and peroxidases. Catalases dismutase H2O2 into O2 and H2O (2 H2O2.fwdarw. 2 H2O + O2), where as peroxidases convert H2O2 into H2O, thereby consuming reducing power (H2O2 + 2 XH2.fwdarw. 2 H2O + 2 X). Little is known on the relative importance of catalases and peroxidases for H2O2 scavenging during normal metab. and during stress conditions in plants. We decided to study the role of catalases in transgenic tobacco, in which catalase leveles have been modified by sense and antisense technol. In addn., the availability of these transgenic tobacco plants also provides a basis for elucidating the signalling function of H2O2 during the activation of genetic responses to biotic and abiotic stresses. The haploid genome of Nicotiana plumbaginifolia contains three expressed catalase genes (Cat1, Cat2 and Cat3). Here we have made several antisense constructs (pCAT1AS, pCAT2sAS and pCAT2AS) for over prodn. and suppression of catalase, contg. 3' part of the Cat1 cDNA, Cat2 cDNA and the entire Cat2 coding region, resp. These constructs were used in transformation studies to elucidate the role of each of the three catalase genes. Under low-light conditions (100:molm-2s-1) transgenic lines with strongly reduced catalase levels were phenotypically indistinguishable from controls. This observation indicates that under these conditions 10% of normal catalase activity is sufficient for protecting tobacco plants from H2O2 toxicity. However when shifter to higher light intensities, plants deficient in Cat1 developed white, necrotic areas on parts of the leaves. Based on the Cat1 expression profile, it was proposed that its main function would reside in the removal of H2O2 that is produced during photorespiration. In conclusion,

we have shown that a severe deficiency in Cat1, but not in Cat2, is conditionally lethal to photosynthetic cells. The results indicate that inactivation of Cat1 is not sufficient to generate a signal for the activation of pathogenesis-related responses.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 19 OF 26 CA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 127:232717 CA

TITLE: Transfection of **Cu-Zn superoxide** dismutase **antisense** cDNA promotes motility and metastasis of murine fibrosarcoma cells

AUTHOR(S): Tanaka, Maki

CORPORATE SOURCE: First Dep. Oral Surgery, Sch. Dentistry, Health Sci. Univ., Hokkaido, Japan

SOURCE: Higashi Nippon Shigaku Zasshi (**1997**), 16(1), 71-85
CODEN: HNSZEX; ISSN: 0910-9722

PUBLISHER: Higashi Nippon Shigakkai

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Previously the author and his colleagues reported that a clone of human tongue cancer cells with higher invasiveness expressed lower Cu-Zn SOD (superoxide dismutase) activities than a clone with low invasiveness and that suppression of **Cu-Zn SOD** activity by **antisense** cDNA transfection resulted in enhanced motility of human tongue cancer cells in vitro. However, whether or not this inverse relation between intracellular Cu-Zn SOD activity and motility of tumor cells is generally found in other tumor cells and whether the intracellular Cu-Zn SOD in fact defines in vivo metastatic potential were undetd. In the present study, the author transfected **antisense Cu-Zn SOD** cDNA into murine Meth A sarcoma-derived ML-01 cells with low metastatic property and obtained five clones. Two clones with different SOD activities, ML-AS2 with the most suppressed activity and the ML-AS5 with the least suppressed activity, were analyzed for their motility and metastatic ability. The result was that ML-AS2 exhibited 4 fold increased cell motility and ML-AS5 exhibited 2.2 fold increased motility as compared to the mock transfectant ML-neo cells. In addn., superoxide treatment enhanced the invasiveness of ML-AS clones but not of ML-neo. Metastatic potential of ML-AS2 and ML-AS5 were 4.5 and 2.1 fold of that of ML-neo, resp. Thus, these results suggested that the intracellular Cu-Zn SOD level and in vivo metastatic potential are inversely related via regulating cell motility.

L7 ANSWER 20 OF 26 CA COPYRIGHT 2003 ACS

ACCESSION NUMBER: 126:57398 CA

TITLE: The salicylic acid signal for the activation of plant disease resistance: induction, modification, perception and transduction

AUTHOR(S): Conrath, U.; Chen, Z.; Malamy, J.; Durner, J.; Hennig, J.; Sanchez-Cases, P.; Silva, H.; Ricigliano, J.; Klessig, D. F.

CORPORATE SOURCE: Waksman Institute and Department of Molecular Biology and Biochemistry, Rutgers - The State University of New Jersey, Piscataway, NJ, 08855, USA

SOURCE: Modern Fungicides and Antifungal Compounds, International Symposium, 11th, Friedrichroda, Germany, May 14-20, 1995 (**1996**), Meeting Date 1995, 467-473. Editor(s): Lyr, Horst; Russell, Philip E.; Sisler, Hugh D. Intercept: Andover, UK.
CODEN: 63RYAG

DOCUMENT TYPE: Conference; General Review
LANGUAGE: English

AB A review with 22 refs. Numerous studies suggest that salicylic acid (SA) is an important signal for the activation of plant defense against pathogen attack. In tobacco, increases in endogenous SA levels correlate with both the activation of genes encoding pathogenesis-related (PR) proteins, such as PR-1, and the establishment of enhanced resistance to tobacco mosaic virus. Some of the newly synthesized SA was conjugated to glucose to form an inactive SA .beta.-glucoside, which may be a storage form of SA. In a search for the cellular component which is responsible for the perception and transduction of the SA signal, a sol. SA-binding protein was purified from tobacco leaves and its encoding cDNA was isolated. The SA-binding protein was subsequently identified as a catalase, whose ability to convert H2O2 to O2 and H2O was inhibited by binding of SA and its biol. active analogs. It is proposed that the resulting rise in intracellular levels of reactive oxygen species played a role in the induction of defense responses, such as PR gene expression. Consistent with this model, several prooxidants induced PR-1 genes while antioxidants suppressed SA-mediated PR-1 gene activation. In addn., results with transgenic plants expressing an **antisense** copy of a **catalase** gene suggested that inhibition of catalase synthesis leads to PR-1 gene induction in some tissues. Several abiotic inducers of PR gene expression enhanced disease resistance for their ability to stimulate SA biosynthesis. Levels of SA and its glucoside rose following injection of tobacco leaves with all of the inducers tested except 2,6-dichloroisonicotinic acid (INA). This latter substance, as well as several biol. active INA analogs, were found to bind catalase directly and inhibit its enzymic activity. Thus, many inducers of PR gene expression and enhanced disease resistance, directly or indirectly, inactivate catalase. Such findings indicate an important role for reactive oxygen species in the induction of certain plant defense response.

L7 ANSWER 21 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 126:4836 CA
TITLE: Ascorbate peroxidase and salicylic acid-binding catalase and their assays and roles in plant disease defense mechanisms
INVENTOR(S): Klessig, Daniel Frederick; Chen, Zhixiang
PATENT ASSIGNEE(S): Rutgers, the State University, USA
SOURCE: PCT Int. Appl., 110 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9631597	A1	19961010	WO 1996-US4762	19960408 <--
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
US 5989846	A	19991123	US 1995-470769	19950603 <--
AU 9653870	A1	19961023	AU 1996-53870	19960408 <--

PRIORITY APPLN. INFO.:

US 1995-418554	A	19950407
US 1995-470769	A	19950603
US 1992-923229	B2	19920731
US 1993-38132	B2	19930326
US 1993-146317	B2	19931102

US 1994-259535 B2 19940614
WO 1996-US4762 W 19960408

AB The present invention relates to catalase, ascorbate peroxidase, H2O2 and other active oxygen species derived form H2O2 and their role in a plant's disease defense response. The invention also relates to the use of ascorbate peroxidase alone or in combination with catalase, to identify inducers of plant defense resistance response. Thus, a salicylic acid-binding protein is purified from tobacco and characterized and is shown to be a catalase that may be involved in the oxidative burst assocd. with the response to pathogens. The protein is found in a no. of plants. Chromatog. purifn. of the protein from tobacco leaf homogenates is described; it is shown to be a 240-280-kDa protein that is an oligomer of an .apprx.57-kDa subunit. Cloning and expression of a cDNA for the protein is described. Binding of salicylic acid by the catalase leads to an inhibition of activity. A no. of salicylic acid analogs were tested and their inhibition of the enzyme correlated with their in vivo biol. activity and their effects on leaf H2O2 levels. Increasing leaf levels of H2O2 increased the level of PR-1 gene expression and an **antisense** gene for the **catalase** also increased PR-1 gene expression in transformed plants. Ascorbate oxidase is also inhibited by salicylic acid and 2,6-dichloroisonicotinic acid in tobacco. Salicylic acid analogs active in inhibiting catalase were very effective inhibitors of ascorbate peroxidase activity, whereas the catalase inactive derivs. were also much poorer inhibitors of ascorbate peroxidase.

L7 ANSWER 22 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 124:333134 CA
TITLE: Recombinant defective adenoviruses containing glutathione peroxidase DNA and their use disease treatment
INVENTOR(S): Barkats, Martine; Mallet, Jacques; Revah, Frederic
PATENT ASSIGNEE(S): Rhone-Poulenc Rorer S.A., Fr.
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9605320	A1	19960222	WO 1995-FR1002	19950726 <--
W: AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TT, UA, UG, US, UZ, VN				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
FR 2723588	A1	19960216	FR 1994-9982	19940812 <--
FR 2723588	B1	19960920		
CA 2197235	AA	19960222	CA 1995-2197235	19950726 <--
AU 9530826	A1	19960307	AU 1995-30826	19950726 <--
AU 710727	B2	19990930		
EP 775213	A1	19970528	EP 1995-926429	19950726 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
JP 10504193	T2	19980428	JP 1995-507057	19950726 <--
ZA 9506678	A	19960320	ZA 1995-6678	19950810 <--
NO 9700282	A	19970122	NO 1997-282	19970122 <--
FI 9700579	A	19970211	FI 1997-579	19970211 <--
US 2001029249	A1	20011011	US 1997-776786	19970501

PRIORITY APPLN. INFO.:
FR 1994-9982 A 19940812
WO 1995-FR1002 W 19950726

AB The present invention relates to a defective recombinant adenovirus comprising at least a DNA sequence coding for all or an active part of glutathione peroxidase or a deriv. thereof. It also relates to their utilization in therapy and to the corresponding pharmaceutical compns. Recombinant defective adenovirus Ad-bGPx, contg., inserted into the E1 gene, the bovine glutathione peroxidase cDNA controlled by the Rous sarcoma virus LTR, was constructed. 293 Cells infected with this recombinant virus displayed glutathione peroxidase activity.

L7 ANSWER 23 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 123:108232 CA
TITLE: A salicylic acid-binding catalase from tobacco and its enzymic properties and biological uses
INVENTOR(S): Klessig, Daniel; Chen, Zhixiang
PATENT ASSIGNEE(S): Rutgers University, USA
SOURCE: PCT Int. Appl., 112 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9512304	A1	19950511	WO 1994-US12620	19941102 <--
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: KE, MW, SD, SZ, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
CA 2175493	AA	19950511	CA 1994-2175493	19941102 <--
AU 9481315	A1	19950523	AU 1994-81315	19941102 <--
EP 726701	A1	19960821	EP 1995-900513	19941102 <--
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
JP 09504697	T2	19970513	JP 1994-513399	19941102 <--

PRIORITY APPLN. INFO.:
US 1993-146317 A 19931102
US 1994-259535 A 19940614
WO 1994-US12620 W 19941102

AB A salicylic acid-binding protein is purified from tobacco and characterized and is shown to be a catalase that may be involved in the oxidative burst assocd. with the response to pathogens. The protein is found in a no. of plants. Chromatog. purifn. of the protein from tobacco leaf homogenates is described; it is shown to be a 240-280 kDa protein that is an oligomer of an approx. 57 kDa subunit. Cloning and expression of a cDNA for the protein is described. Binding of salicylic acid by the catalase leads to an inhibition of activity. A no. of salicylic acid analogs were tested and their inhibition of the enzyme correlated with their in vivo biol. activity and their effects on leaf H2O2 levels. Increasing leaf levels of H2O2 increased the level of PR-1 gene expression and an **antisense** gene for the **catalase** also increased PR-1 gene expression in transformed plants.

L7 ANSWER 24 OF 26 CA COPYRIGHT 2003 ACS
ACCESSION NUMBER: 115:275182 CA
TITLE: Site-specific DNA cleavage by antisense oligonucleotides covalently linked to phenazine di-N-oxide
AUTHOR(S): Nagai, Katsuyuki; Hecht, Sidney M.
CORPORATE SOURCE: Dep. Chem., Univ. Virginia, Charlottesville, VA, 22901, USA
SOURCE: Journal of Biological Chemistry (**1991**),

266(35), 23994-4002
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Site-specific degrdn. of DNA was achieved by the use of DNA oligonucleotides covalently tethered to phenazine 5,10-di-N-oxide. When annealed to a cDNA target strand, the antisense oligonucleotide effected alkylation of guanosine residues in proximity to the phenazine di-N-oxide prosthetic group. Admixt. of dithiothreitol to the formed duplex resulted in reductive activation of the phenazine di-N-oxide moiety with concomitant generation of diffusible O radicals; the latter effected strand scission of the target DNA oligonucleotide. Several parameters of DNA degrdn. were studied, including the effect on DNA degrdn. of chain length in the tether connecting the oligonucleotides and prosthetic group, the relative efficiencies of DNA cleavage when the prosthetic group was in the middle or at the end of the antisense oligonucleotide, and the effect of O on DNA degrdn. Also studied was the actual chem. of DNA oligonucleotide degrdn. and the ability of individual diastereomers of the modified oligonucleotides to mediate degrdn. of the target DNA.

L7 ANSWER 25 OF 26 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 97:651065 SCISEARCH
THE GENUINE ARTICLE: XL119
TITLE: **Antisense** expression of **catalase** gene in transgenic tomato.
AUTHOR: Kerdnaimongkol K (Reprint); Woodson W R
CORPORATE SOURCE: PURDUE UNIV, DEPT HORT, W LAFAYETTE, IN 47907
COUNTRY OF AUTHOR: USA
SOURCE: PLANT PHYSIOLOGY, (**JUL 1997**) Vol. 114, No. 3, Supp. [S], pp. 439-439.
Publisher: AMER SOC PLANT PHYSIOLOGISTS, 15501 MONONA DRIVE, ROCKVILLE, MD 20855.
ISSN: 0032-0889.
DOCUMENT TYPE: Conference; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 0

L7 ANSWER 26 OF 26 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 96:224427 SCISEARCH
THE GENUINE ARTICLE: TZ284
TITLE: **ANTISENSE** CLASSICAL **GLUTATHIONE-PEROXIDASE** IS LETHAL TO STABLY-TRANSFECTED CHINESE-HAMSTER OVARY CELLS UNDER G418 SELECTION
AUTHOR: FERGUSONKOHOUT N (Reprint); WEISS S L; SUNDE R A
CORPORATE SOURCE: UNIV MISSOURI, COLUMBIA, MO, 65211
COUNTRY OF AUTHOR: USA
SOURCE: FASEB JOURNAL, (**08 MAR 1996**) Vol. 10, No. 3, pp. 3067.
ISSN: 0892-6638.
DOCUMENT TYPE: Conference; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: No References